**LESSON PLAN**

Caroline, Christine, Bryan

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| **Subject/Course:** MPM2D |
| **Grade Level:** 10 |
| **Topic:** Trigonometric Ratios |
| **AT Name:** Robin Kay |
| **TC Name:** Bryan, Caroline, and Christine |
| **Date:** January  28th 2014 |
| **Time of Class:** 75 minutes |
| **Location:** Rm.312 |

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| **Expectations (from curriculum document)** |
| Students will:   * Determine the measures of the sides and angles in right triangles, using the primary trigonometric ratios and the Pythagorean theorem * Solve problems involving the measure of sides and angles in right triangles in real life applications, using the primary trigonometric ratios and the Pythagorean theorem. |
| **Learning Goals** |
| Students will be able to:   * calculate the length of an unknown side in a right triangle * calculate the magnitude of an unknown angle in a right triangle * apply knowledge of trigonometric ratios to solve application problems involving the measure of sides and angles in right triangles |
| **Success Criteria:** |
| I can:   * find the length of an unknown side in a right triangle * find the size of an unknown angle in a right triangle * apply my knowledge to solve word problems involving right triangles |

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| **Accommodations / Modifications** |
| * Heterogeneous groups have been pre-chosen, so that all groups have a chance of being successful * Groups of three students will be formed; one person will be designated “Team Writer”, the second student will be “The Coach” and the third student will be named “The Builder”.  Roles will be rotated after each question is completed. * The teacher will be circulating the class to check students’ understanding and provide assistance and support * Jason has vision impairment; his group will be situated near the front of the class.  All questions will be available to students on the course wiki so that he can enlarge the document on his personal computer. |
| **Overview of the Lesson** |
| * Clicker Quiz * Spaghetti and Marshmallows Hook * Spaghetti and Marshmallows Activity * Ticket out the door |
| **Resources** |
| * Questions that were used in today’s activity * Spreadsheet of all the answers for each question in today’s activity * 1 pack of uncooked spaghetti, 1 bag of mini-marshmallows * Powerpoint slides, projector, screen, and internet access * Gr 10 Nelson Math Textbook |
| **Introduction of Lesson** |
| * This lesson serves as a review for the upcoming quiz. * To review important concepts, students will have a ‘clicker-quiz’ that will be assessed (See attached Powerpoint Presentation: “Clicker Quiz”). Students will be asked to solve knowledge/understanding as well as application problems involving missing sides and angles of a right triangle. * Teacher chooses a question which encompasses everything in the lesson: Solve a right triangle (find all the missing sides and angles) * Then the teacher does an application question on the board, questioning students throughout, and asking for volunteers to solve the problem on the board. * “Now we are ready to begin our spaghetti and marshmallow challenge!  Let’s see if our class can beat last year’s record!” * Teacher will go over game rules, which will be displayed for students to see |

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| **Hook** |
| * A picture of last year’s marshmallow and spaghetti contest will be displayed on the projector. Students are asked the following questions:   1. What do you think this is?  2. What do you think the tower is made of?  3. If the class could build a tower out of only spaghetti and mini marshmallows, how tall do you think we could   make it?   * Students discover that they will be participating in this activity to help them review for their upcoming quiz. * Last year’s tower height record will be revealed; students will be working collaboratively as a class to build one tower to ‘beat’ this record. * Last year’s revealed ‘record’ will be set so that it is easily attainable for this class |
| **Activity** |
| * Heterogeneous groups of 3 (based on student abilities) will be displayed on the projector * One person from each will be designated “Team Writer”, the second student will be “The Coach” and the third student will be named “The Builder”.  Roles will be rotated after each question is completed. * The team writer will be responsible for writing the team solution to the posted problem.  The Coach will provide encouragement and support the Team Writer.  Lastly, The Builder will be given the spaghetti and marshmallows and work collaboratively with The Builders in each group to build the tower. * Each builder will start off with four pieces of spaghetti and four marshmallows.  Collaboratively, all the builders will work together to start building the tower while the remainder of the class works on the mathematics problems. * The first problem will be displayed on the projector.  Each group will be working on the same problem at the same time. * The teacher will be circulating the class to ensure that students remain on task and are showing all their work.  The teacher will provide support to students who require it. * After students have had enough time to complete the problem, the teacher will select volunteers to present their solutions on the board and take up any questions or concerns with the class. * The group roles will then be rotated: Team Writer → Coach → Builder → Team Writer * The new Builders then collect the appropriate number of spaghetti and marshmallows awarded from the previous problem, and continue the building process. * This process is repeated for approximately 40 minutes. |

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| **Consolidation** |
| * Class will form a circle around the final tower and discuss the activity.  A volunteer is selected to measure the height of the tower, and the class is congratulated for their success! * Ticket-out-the-door: At the end of the discussion, students will self-assess their level of understanding via the following question:              On a scale of 1-10 (with 1 being the lowest and 10 being the highest), how prepared do you feel for tomorrow’s quiz? Justify why you feel this way.   * If students feel that they need extra practice, the following worksheet will be recommended: [SOH CAH TOA Worksheet](http://coachforrester.weebly.com/uploads/1/3/1/9/13191763/sohcahtoa_practice.pdf) |